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December 15, 1998

By Hand Delivery

Ms. Magalie Salas, Secretary
Federal Communications Commission
1919 M Street, N.W.
Room 222
Washington, D.C. 20554

BOSTON
NEW YORK
SILICON VALLEY
SOUTHERN CALIFORNIA
TWIN CITIES
WASHINGTON, DC

Re: 1998 Biennial Regulatory Review -- Amendment of Part 18 of the Commission's Rules to Update Regulations for RF Lighting Devices
ET Docket No. 98-42

Dear Ms. Salas:

Pursuant to Section 1.1206(a)(2) of the Commission's Rules, and on behalf of Fusion Lighting Corporation, this letter is to report oral and written ex parte communications in the above-reference proceeding.

On December 10, 1998, Michael Ury and Jim Proctor of Fusion Lighting, Robert La Gasse of the International Microwave Power Institute and I met with Daniel Conners of Commissioner Ness's office and later with Julius Knapp, Bruce Franca and Karen Rackley of the Office of Engineering and Technology.

The purpose of the meeting was to provide rebuttal evidence to materials provided by various Part 15 device manufacturers and others as to the theoretical in-band interference issues associated with 2.45 GHz RF lighting. Information presented at the meeting is enclosed herewith. The in-band emission data presented on the Fusion lighting device is preliminary in nature; more precise measurements will need to be taken on production units before any definitive in-band information can be generated.

Very truly yours,

Terry G. Mahn

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Enclosure
cc: Mitchell Lazarus [w/encl.]
Fusion Lighting [w/o encl.]

93475.W11

MISCONCEPTIONS ABOUT 2.45 GHz RF LIGHTING IN *EX PARTE* FILING OF WIRELESS LAN MANUFACTURERS DOCKET ET 98-42

"RF Lighting Proponents Have Declined or Refused to Share Data"

- Fusion Lighting is under no legal or regulatory obligation to test for in-band emissions
- Fusion was never asked by wireless LAN manufacturers for in-band test data; Fusion was asked, on short notice, to do joint testing
- Fusion products have been available on the market for several years for LAN manufacturers to test
- Fusion provided the FCC Labs with a sample RF lighting device in 1996 that was tested for in-band emissions

MISCONCEPTIONS ABOUT 2.45 GHz RF LIGHTING IN *EX PARTE* FILING OF WIRELESS LAN MANUFACTURERS DOCKET ET 98-42

"Severe and Widespread Interference Will Occur From RF Lighting"

- *Ex Parte* data was based on worst case RF safety limits which have no applicability to RF interference
- *Ex Parte* data assumed 8 watts of radiation; in fact, the Fusion Lamp radiates only 50 milliwatts
- Fusion lamps sold in Europe are 20 dB below IEC/CISPR Publication 15 limits for ISM band lighting (100 dBuV/m)
- Fusion lamps are CE-marked and have been on EU market for several years with no reports of interference

MISCONCEPTIONS ABOUT 2.45 GHz RF LIGHTING IN *EX PARTE* FILING OF WIRELESS LAN MANUFACTURERS DOCKET ET 98-42

Ex Parte Proposal Will "Shield 98% of Emissions Passing 95% of Light for Pennies Per Unit"

- Proposal implies Fusion is an uncaring RF designer
- Projected RF attenuation (98%) is a theoretical value that assumes perfect conductivity of the wire mesh
- Proposal assumes a wire diameter of .003"; no known wire of such dimension can be fabricated from a material with perfect conductivity at 2.45 GHz -- certainly not at "pennies per unit"

MISCONCEPTIONS ABOUT 2.45 GHz RF LIGHTING IN *EX PARTE* FILING OF WIRELESS LAN MANUFACTURERS DOCKET ET 98-42

Proposal Will "Shield 98% of Emissions Passing 95% of Light for Pennies Per Unit"

- Fusion invests considerable resources in RF shielding on the assumption that any lamp which causes interference to a 2.45 GHz LAN systems will be refused installation or returned by the customer

- Fusion already implements a secondary RF shield in the cover glass on all of its lamps which outperforms the proposed solution both optically and in terms of RF attenuation

- Fusion's RF shield costs $12 per lamp

MISCONCEPTIONS ABOUT 2.45 GHz RF LIGHTING IN *EX PARTE* FILING OF WIRELESS LAN MANUFACTURERS DOCKET ET 98-42

"Allowing RF Lighting to Proliferate in U.S. Without In-Band Limits Effectively Disrupts International Usage of the 2.45 GHz Band"

- The 2.45 GHz band is harmonized internationally for ISM priority
- Unlicensed use of the 2.45 GHz band for LAN devices is non-harmonized outside the U.S.

MISCONCEPTIONS ABOUT 2.45 GHz RF LIGHTING IN *EX PARTE* FILING OF WIRELESS LAN MANUFACTURERS DOCKET ET 98-42

"Other Part 18 Devices Are Used Individually Whereas Lighting Devices Are Installed In Multiple Units Per Site"

- Microwave ovens are installed in multiple units per site in tens of thousands of restaurant and food outlets throughout the world

MISCONCEPTIONS ABOUT 2.45 GHz RF LIGHTING IN *EX PARTE* FILING OF WIRELESS LAN MANUFACTURERS DOCKET ET 98-42

"FCC Requested Comments on Whether It May Be Necessary To Establish In-Band Limits"

- Docket 98-42 requested comment ONLY on licensed services (MSS) in the upper portion of the 2.45 GHz band
- Docket 98-42 invited no comment on Part 15 interference issues

MISCONCEPTIONS ABOUT 2.45 GHz RF LIGHTING IN *EX PARTE* FILING OF WIRELESS LAN MANUFACTURERS DOCKET ET 98-42

"FCC Invited The Part 15 Industry To Develop Equipment Using The 2.45 GHz ISM Band"

- In Docket 81-413 (spread spectrum), the FCC refused to adopt higher limits for Part 15 because:

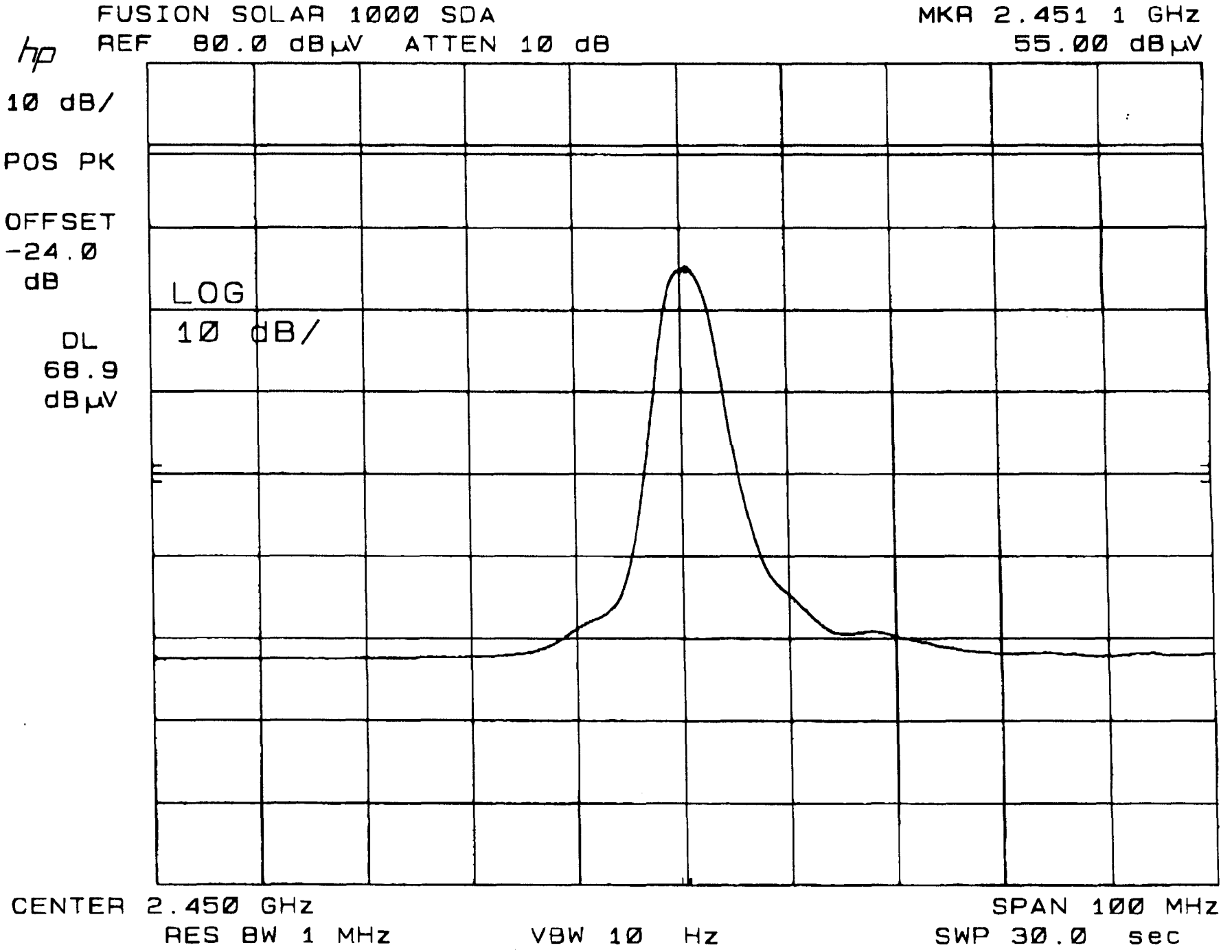
> "steady encroachment on [the ISM] bands by [such] services will eventually lead to petitions from these other users for protection from interference from ISM devices."

MISCONCEPTIONS ABOUT 2.45 GHz RF LIGHTING IN *EX PARTE* FILING OF WIRELESS LAN MANUFACTURERS DOCKET ET 98-42

"FCC Should Consider Input on Part 15 Spread Spectrum Devices When Authorizing New Types of Part 18 Devices"

- In Docket 81-413 the FCC stated:

  "spread spectrum systems are allowed to operate within the ISM bands only on a noninterference basis ... [and] must not cause any harmful interference to these operations and must accept any interference which these systems may cause to their own operations."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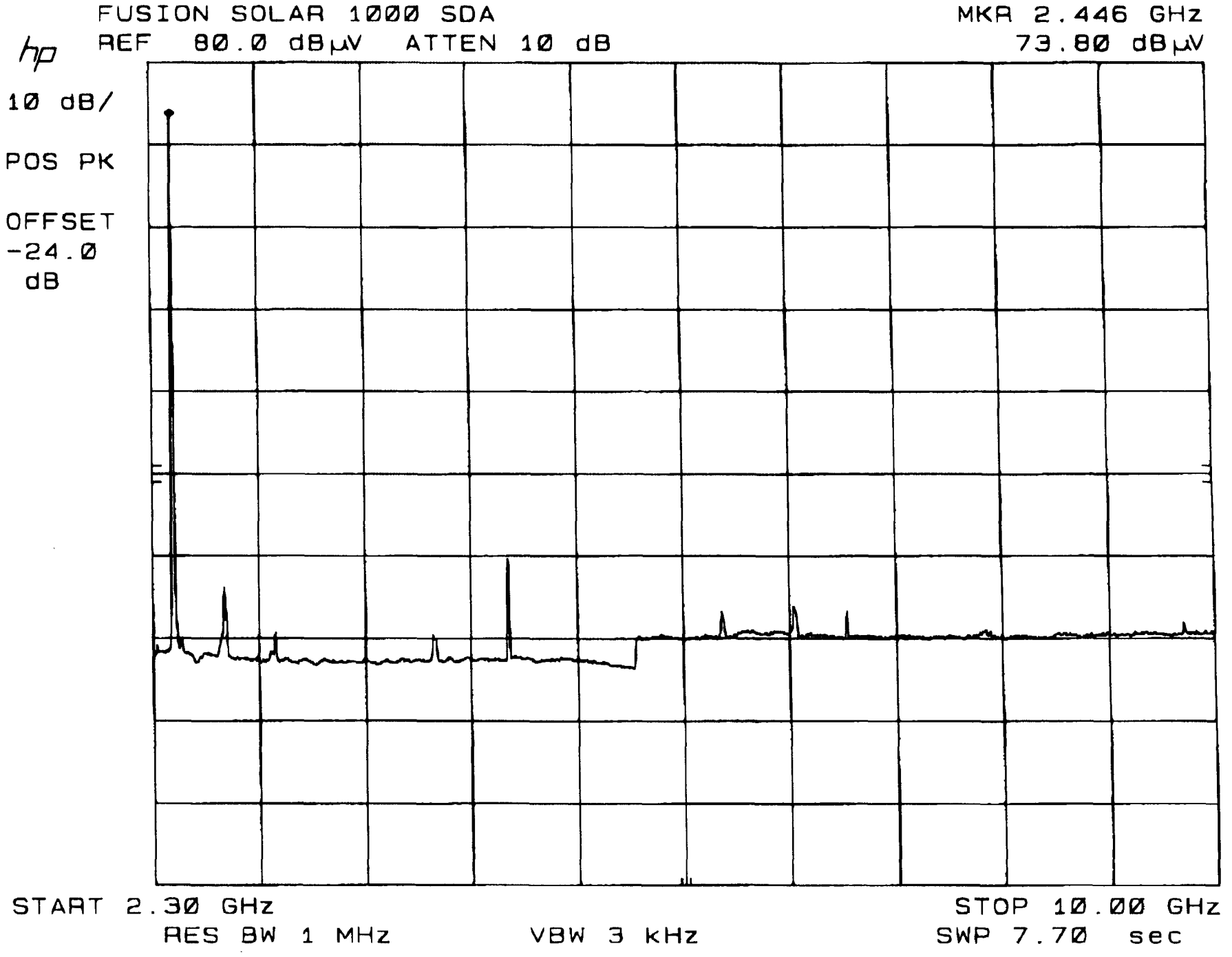
MKR 2.451 1 GHz
REF 80.0 dBµV ATTEN 10 dB
55.00 dBµV
10 dB/
POS PK
OFFSET
-24.0
dB
LOG
10 dB/
DL
68.9
dBµV
CENTER 2.450 GHz
SPAN 100 MHz
RES BW 1 MHz
VBW 10 Hz
SWP 30.0 sec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MKR 2.446 GHz
REF 80.0 dBµV ATTEN 10 dB
73.80 dBµV
10 dB/
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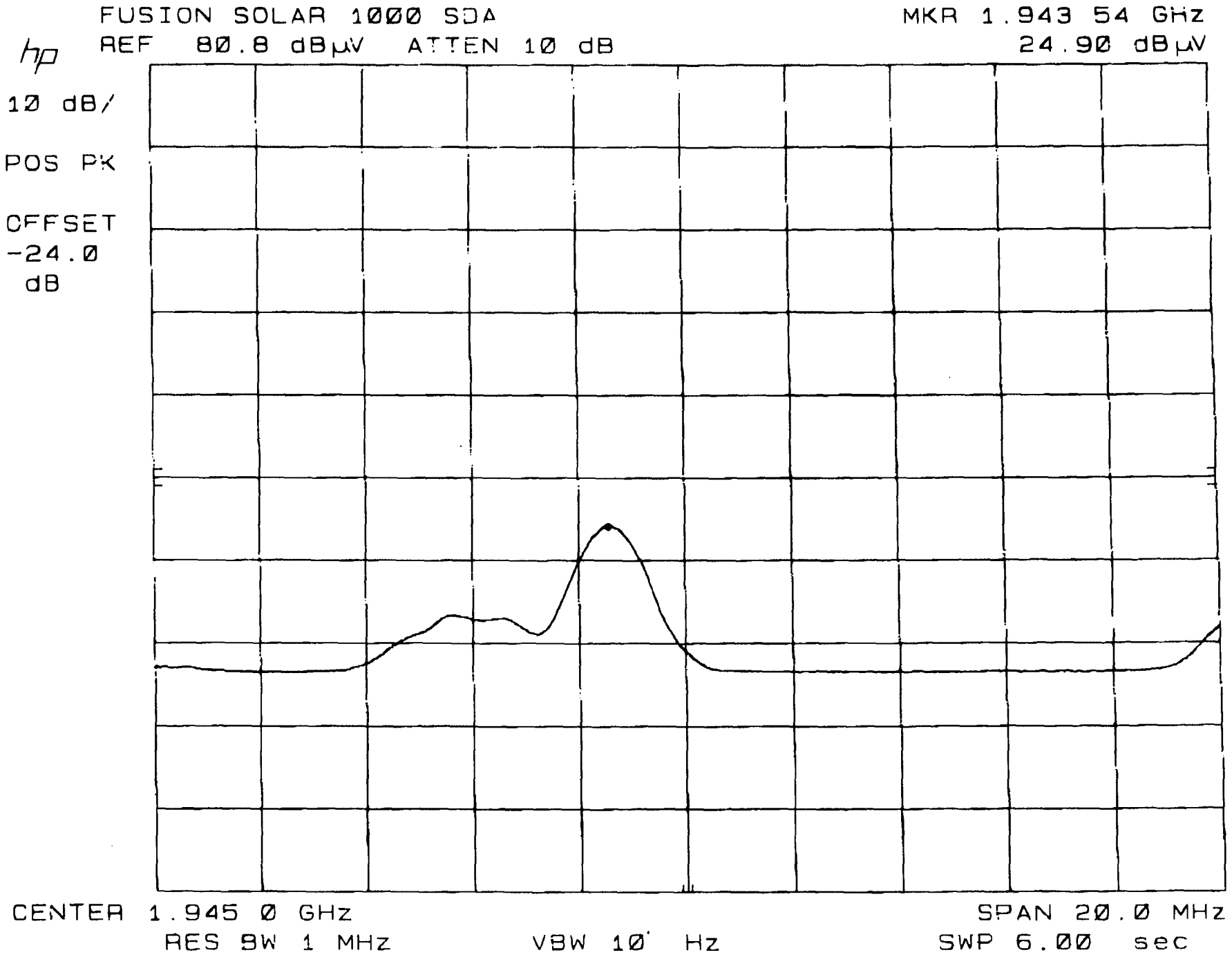
dB
START 2.30 GHz
STOP 10.00 GHz
RES BW 1 MHz
VBW 3 kHz
SWP 7.70 sec


FUSION SOLAR 1000 SDA
MKR 1.943 54 GHz
REF 80.8 dBµV ATTEN 10 dB
24.90 dBµV
10 dB/
POS PK
OFFSET
-24.0
dB
CENTER 1.945 0 GHz
SPAN 20.0 MHz
RES BW 1 MHz
VBW 10 Hz
SWP 6.00 sec

2.45 GHz BAND LIMITS

Device Type	Limits	Rule
ISM	None	18.301 CISPR 11
Wireless LAN	**4 Watts EIRP**	**15.247**
Field Disturbance Sensors	500 mV/m	15.245
International RF Lighting	100 mV/m	CISPR 15
All Other Part 15	50 mV/m	15.249
Wireless LAN Proposal for U.S. RF Lighting	**1 mV/m**	